



# **New Energy for the Fifth District:**

## *A Blueprint for Putting Southside and Central Virginia at the Forefront of the Clean Energy Economy*

### **EXECUTIVE SUMMARY:**

**The 5<sup>th</sup> District of Virginia is positioned to become a leading region in the nation for the clean energy economy.**

- *The location is right:* the region has an abundance of farmland for the production of bioenergy and post-industrial sites ideal for developing clean energy technologies. Its proximity to federal agencies in Washington, DC and to the population centers of the east coast makes it accessible for both demonstration and commercialization purposes.
- *The time is right:* both the American Recovery and Reinvestment Act and the American Clean Energy and Security Act will provide unprecedented investments in clean energy.
- *The resources are right:* the district is home to world-class research centers and is positioned to leverage funds provided by the Virginia Tobacco Indemnification and Community Revitalization Commission.
- *The people are right:* entrepreneurs and farmers in the region are ready to become freedom fighters in the struggle to reduce our dependence on foreign oil.

This document is the product of a "New Energy Summit" held on April 10, 2009 in Rustburg, VA at which Congressman Tom Perriello convened more than 50 leaders in new energy from around the 5<sup>th</sup> District.

### **A Declaration of Energy Independence**

Our region of Virginia gave birth to the Declaration of Independence and is once again poised to lead our nation towards energy independence. Rather than sending our oil and gas dollars overseas, we should be investing in homegrown energy and industry. In the course of that transformation, we will spur the creation of jobs for our fellow citizens while meeting our obligation as stewards of God's creation. Through this daring, we will forge a new competitive advantage and a new freedom for a new generation.

## Why the 5<sup>th</sup> District of Virginia?

*“Central and Southern Virginia served as the cradle of American liberty and also the economic driver of the Commonwealth for more than a century. We can be that again as we blaze a trail towards energy independence and a clean technology future. We have the entrepreneurs, research universities, and farmers that can transform our hard-hit area into a hard-charging economic engine generating jobs that cannot be outsourced and renewing, as each American generation must, our reach for an ever-expanding horizon of freedom. In these tough times, we must have the courage to think beyond merely surviving as a region and dare to think about how we can thrive again.”*

- Congressman Tom Perriello, VA 5<sup>th</sup> District

We have leverage for new energy investments: The Virginia Tobacco Indemnification and Community Revitalization Commission is currently considering a commitment of \$100 million to commercialize alternative energy projects, especially those that take advantage of our vast agricultural resources.

We have the research horsepower: The University of Virginia (Charlottesville), Virginia Polytechnic Institute and State University (Blacksburg), the Center for Advanced Engineering and Research (Lynchburg), the Virginia Clean Energy Business Incubator of the National Renewable Energy Laboratory (South Boston), and the Institute for Advanced Learning and Research (Danville).

We have unprecedented public investment from the American Recovery and Reinvestment Act: The Recovery Act provides an unprecedented investment in energy initiatives, more than \$30 billion. In the 5<sup>th</sup> District alone this year, nearly \$9 million will be invested in home weatherization, in addition to hundreds of thousands more to localities in the form of energy efficiency and conservation block grants. If the American Clean Energy and Security Act is passed into law, it will usher in millions more in clean energy investments.

We have a track record of local-state-federal partnerships in new energy approaches: An innovative program developing in the City of Charlottesville and County of Albemarle and supported by state law will allow those localities to lend funds from federal and other grant sources to area residents to make their homes more energy efficient; those loans will be repaid from the energy savings. In the Dan River region, a collaborative of businesses, non-profits and schools is fostering workforce partnerships that will spur employment, training, and labor market outcomes in the area of clean energy skills. These kinds of innovative programs show the willingness and enthusiasm of local and state legislators to advance a clean energy economy.

We have the workforce: Becoming a leader in energy efficiency and energy production can produce a magnetic effect, attracting those businesses involved in the clean energy industry. Our workers, many of whom have been displaced in a post-industrial economy, can take advantage of these new opportunities. The workforce can include manufacturing of new energy equipment, such as structural insulated panels, advanced batteries, energy efficient vehicles, wind turbines and solar panels; farming of feedstocks; and building and retrofitting energy efficient structures.

## What could a 5<sup>th</sup> District clean energy economy look like?

*“The new energy economy will be a big boost to our area. It’s a win-win-win-win situation. We can create clean energy jobs, turn waste into power, support our farmers, protect God’s creation, and reduce our dependence on foreign oil. When the recession ends, energy demands are going to increase. If we invest now, the 5th District can be at the forefront of that job boom by creating American-grown energy.”*

- Congressman Tom Perriello, VA 5<sup>th</sup> District

The clean energy economy flows from three basic principles:

1. **Maximize efficiency, since the cheapest power is power we never use**
2. **Revolutionize sources of energy, using regional and renewable solutions**
3. **Decentralize production to keep transaction costs low and profits local**

### MAXIMIZE EFFICIENCY

The route to energy independence, economic competitiveness and environmental protection begins with increased efficiency. The cheapest energy is the energy we don’t use and the cheapest energy source is the one that is used completely. Before determining how best to produce power, we should make sure that the power we produce is used efficiently.

#### Building Efficiency:

Throughout the region, architects are designing and contractors are building energy efficient structures. Companies in Franklin County manufacture energy efficient buildings and insulated windows. In Pittsylvania County yet another makes structural insulated panels. The region’s climate makes it ideally suited to explore heat sink and passive technologies. Localities are considering encouraging landlords to increase efficiency by disclosing to tenants the energy use of their units. Communities are converting to energy efficient street lights and traffic lights.

#### Home Efficiency:

A program in development with the City of Charlottesville and County of Albemarle and supported by state law allows those localities to lend funds from federal and other grant sources to area residents to make their homes more energy efficient. The loans would be paid back from the energy savings that are generated by the efficiency upgrades, and the federal funds would also be used to train area workers in retrofitting and energy efficiency upgrading. This program can be replicated in localities across the district and create a national model for a region committing itself to energy efficiency and workforce training for this new job market.

#### Production Efficiency:

Community-sized bio-power plants can use both the electricity and the heat they produce, getting every bit of energy from the precious fuel they burn. This can provide hot water for our homes, steam for industrial use, heat for school and hospital campuses, and heat that can even be used to cool homes and offices. This will save money for producers and consumers.

#### Locally Grown Food:

Locally grown food not only provides increased nutritional benefits to consumers and an improved market for the region's farmers, but reduces the energy required to move farm goods vast miles from far-away farms to local consumers. Access to locally grown food needs to be made more convenient, and efforts can be made to match institutional consumers of food (like hospitals, schools and restaurants) with local producers.

#### Smart Grid Technology:

Multiple electric utilities serve the region. These include investor-owned utilities, municipally-owned utilities and electric cooperatives. Each would be encouraged to upgrade to a smart electricity grid. The smart grid can allow consumers to monitor and reduce energy use, and can promote the proliferation of small-scale energy production at the home or business scale, where energy can flow back to the utility. Smart grid technology is already being deployed in two of the cities in the region.

To advance the installation of the smart grid, broadband access needs to be available to all homes and businesses in the region. To work, the smart grid requires two-way communication between building and utility. As smart grid applications expand and become more information-intensive, larger bandwidth will likely be required over time. With funding from the Virginia Tobacco Commission, the Mid-Atlantic Broadband Cooperative has already built a broadband spine throughout most of the region. Congressman Perriello will aggressively pursue funding to build the "last mile" that will connect the spine with homes and businesses in the district.

## REVOLUTIONIZE ENERGY SOURCES AND DECENTRALIZE ENERGY PRODUCTION

Efficiency gains alone are not sufficient to meet our need for energy independence. We need to tap all of the energy sources that exist in the region. This will involve moving from the current paradigm of large, centrally-located production facilities to a more dispersed, community-focused approach that takes advantage of local energy sources.

### Bio-refineries/Bio-power plants:

Bio-refineries and bio-power plants can be strategically located throughout the region using feedstocks grown by local farmers, many of whom are looking for a crop to replace tobacco as a sustainable source of income. Ideally, the production facilities would be located within 30 miles of the farms that provide the feedstocks to them. Feedstock producers could have an ownership interest in these production facilities, allowing the profits from the venture to circulate more widely in the local community. Federal legislation could look at shifting farm subsidies to support more crops to be used for bio-fuel production. Entrepreneurs in Henry and Pittsylvania Counties have already built small-scale bio-refineries. Bio-power facilities are being used in Prince Edward and Campbell Counties, and one is being planned in Halifax County to provide power to the local hospital. Bio-refineries could produce the same range of valuable co-products currently produced by petroleum refineries. These co-products include not just liquid transportation fuels (ethanol or diesel), but also heating fuels and bio-resins, precursors to plastic and carbon fibers.

### Landfill Gas-To-Energy projects and Solar power:

Closed landfills in the region can be harvested for methane, either to produce fuel or electricity. There are projects like this pending in the city of Martinsville, and in Cumberland, Halifax and Mecklenburg Counties.

### Solar Power:

Solar thermal and photovoltaic on a residential and commercial scale are precisely distributed to users (on site) and can help homeowners use less purchased energy, thus reducing their costs. Where feasible, landfills used for methane production could also be the site for large-scale solar production. Solar energy can play an important role in reducing peak demand, especially during the summer months where the heat of the sun provides the need for the air conditioning that can be powered by the light of the sun.

#### Waste-to-Energy Projects:

Wastewater treatment plants and farms with concentrated amounts of manure—notably poultry and dairy farms—can harvest the methane produced by the waste and convert it into energy. The by-product of this conversion is fertilizer, and a benefit of this conversion is that it turns a liability into an asset, producing energy while protecting our region’s rivers, streams, lakes and ponds. Plans for such facilities are underway in Albemarle, Cumberland and Pittsylvania Counties.

#### Wind Power:

Similarly, small-scale wind turbines can help reduce consumption from the grid when properly located and could be encouraged throughout the region. Numerous wind energy companies operate in the region, ready to provide power in a new energy economy.

#### Hydro Power:

Several localities, such as the City of Bedford, own dated hydroelectric facilities located in existing dams. Those turbines could be replaced with more efficient devices that can at once produce more electricity while releasing more water downstream to maintain habitat.

#### Nuclear energy:

Communities around Lynchburg have become a magnet for nuclear power entrepreneurs, who are ready to deploy their expertise to develop a safe and rejuvenated nuclear power industry.

#### Advanced Battery Technology:

The region can become a leader in developing and using electric vehicles. The key to extending the range of electric vehicles is developing an advanced battery and reducing the weight of vehicles. The Advanced Vehicle Research Center is opening in the City of Danville, which has attracted a new company to produce advanced battery technology for hybrid buses. There is a pending contract for more than 750 buses nationwide to be equipped with these batteries, which are currently not being manufactured in the U.S. In Charlottesville, a company is designing fast-charging technologies that will effectively extend the range of plug-in electric vehicles.

### **The Benefits of this New Approach to Energy Independence**

This new approach differs from the T. Boone Pickens paradigm which consists of massive wind farms in the Midwest requiring massive new investments in transmission infrastructure to move power from isolated areas to population centers on either coast. That approach remains

anchored in a centralized mindset, and is disproportionately dependent on only one renewable technology.

The new, “all-of-the-above” approach focuses on a *distributed* energy system, with a portfolio of *regionally appropriate* technologies, manufactured *locally*, operating as *distributed* generation sources close to the point of use, wired together into a *smart grid* network. It's a different mindset, analogous to distributed (or cloud) computing versus centralized mainframes. This is about energy independence, economic development and greenhouse gas reduction. It's about community-based energy. This approach yields substantial benefits:

Environmental: this new approach consisting of a **community-based, distributed renewable energy system** reduces transmission and distribution losses/costs at a time when Virginia already imports a significant part of its electricity. Centralized plans result in considerable loss of energy through transmission inefficiencies and fail to reduce Virginia's net electricity trade deficit.

Economic: this new approach **retains and builds community wealth**, by minimizing the export of capital for renewable energy harvested elsewhere, when it is already so plentiful in Virginia in the form of bio-mass, solar and small hydro. Centralized plans export Virginia community wealth (money, jobs, and community capacity-building) for renewable energy and for its generation and transmission in the form of electricity at a time when Virginia's rural communities are already experiencing significant unemployment.

Equitable: this approach targets public investments in community-based, distributed renewable energy systems, and thus represents **the most equitable way to create jobs** and build community wealth across the country. Our region could serve as a model for this approach.

## What's Next

Congressman Perriello continues to seek innovative ideas that will put the 5<sup>th</sup> District at the forefront of the clean energy economy. He is committed to working with federal, state, and local officials to get this done. The time, location, and resources are here. The entrepreneurs and farmers are ready. Let's unleash that great American spirit to take the 5<sup>th</sup> District from the former textile and tobacco capital to the future clean energy capital it can be. To contact Tom, call 202-225-4711 or email [tom.perriello@mail.house.gov](mailto:tom.perriello@mail.house.gov). For more information about federal grant opportunities related to clean and renewable energy technologies, please contact Ms. Brennan Johnson, Grants Coordinator, in the Charlottesville District Office at (434) 293-9631 or [brennan.johnson@mail.house.gov](mailto:brennan.johnson@mail.house.gov).